



定志小丸对东莨菪碱所致小鼠学习记忆障碍的影响及机制

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中文摘要:目的:研究经典古方定志小丸(由石菖蒲、远志、茯苓、人参按2:2:3:3比例组成)对东莨菪碱所致小鼠学习记忆障碍的影响及可能的作用机制。方法:将小鼠随机分为正常组、模型组、阳性对照组(石杉碱甲0.05 mg·kg⁻¹)、定志小丸高、中、低剂量组(700,350,175 mg·kg⁻¹)。连续灌胃7 d后,腹腔注射东莨菪碱(1.5 mg·kg⁻¹)制备小鼠学习记忆障碍模型。通过Morris水迷宫试验评价各组小鼠的学习记忆功能,并测定各组小鼠全脑中谷氨酸(Glu)、γ-氨基丁酸(GABA)、5-羟色胺(5-HT)、多巴胺(DA)、乙酰胆碱(Ach)含量及乙酰胆碱酯酶(AChE)活性。结果:行为学测试结果表明定志小丸能明显降低模型小鼠在Morris水迷宫定位航行试验中的平均潜伏期,增加空间探索试验中的穿越平台次数。目的象限游泳路程及时间的百分比;增加小鼠脑中Glu、5-HT、DA和Ach含量,降低GABA含量和AChE活性。结论:定志小丸可明显改善东莨菪碱所致小鼠学习记忆障碍,增强小鼠学习记忆的能力,其作用机制可能与调节Glu/GABA系统以及提高脑中Ach和单胺递质含量有关。

中文关键词:学习记忆 定志小丸 Ach 5-HT DA Glu GABA

Effect and mechanism of Dingzhixiao Wan on scopolamine-induced learning-memory impairment in mice

Abstract: Objective: To investigate the effect of Dingzhixiao Wan (DZXW), a classic traditional Chinese medicine formula consisting of *Acorus stamineus*, *Polygonum tenuifolium*, *Poria cocos* and *Panax ginseng* in a proportion of 2:2:3:3, on learning-memory impairment induced by scopolamine and its possible mechanisms. **Method:** The mice were randomly divided into six groups: the control group, the model group, the positive huperzine A (0.05 mg·kg⁻¹) group, DZXW 700 mg·kg⁻¹, 350 mg·kg⁻¹ and 175 mg·kg⁻¹ groups. DZXW extracts were orally administered to the mice for 7 days. Scopolamine (1.5 mg·kg⁻¹, ip) was injected to establish the learning and memory impairment model in mice. Morris water maze (MWM) test was used to assess the learning and memory ability of each group. After the test, the activities of glutamic acid (Glu), γ-aminobutyric acid (GABA), serotonin (5-HT), dopamine (DA), acetylcholine (Ach) and acetylcholinesterase (AChE) in brain tissue were measured. **Result:** The praxiology test showed that DZXW significantly decreased the average latency of model mice in the place navigation test, and enhanced the frequency for passing through the platform in the spatial probe test, the percentage between target quadrant swimming distance and time. Moreover, DZXW could significantly increase the contents of Glu and 5-HT, DA and Ach, while reducing the levels of GABA and AChE in mice brain. **Conclusion:** DZXW could significantly ameliorate the scopolamine-induced learning-memory impairment in mice and improve their learning-memory capacity, which may be related to its effect on adjusting Glu/GABA system and increasing Ach and monoamine neurotransmitter contents in mice brain.

Keywords: learning and memory Dingzhixiao Wan Ach 5-HT DA Glu GABA

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